

## REMARKS

### **The Amendments:**

Claims 1 and 44 have been amended to specify that the claimed process is for treating raw water to produce potable water. Support for this amendment is found in as-filed claim 2. It is noted that claim 1 of grandparent Patent No. 6,669,849, to which the present application claims priority, and which has a specification identical to the present specification, similarly recites "A process for the production of potable water from a raw water source . . .".

Claims 10, 12, 30, 38 and 39 have been cancelled as redundant.

No new matter has been added.

With this amendment, claims 1-9, 11, 13-29, 31-37 and 44 are pending.

### **The Telephone Interview**

The Examiner is thanked for the telephone interview on May 16, 2006.

In the telephone interview, the undersigned presented arguments with respect to claims 1 and 44 and claims dependent thereon that the Jowett et al. process would not be considered suitable for treating domestic water because raw water does not contain significant amounts of the proteins, fats and large organic molecules for which the Jowett et al. process was designed, and Jowett et al. teaches that a polishing step after the ion exchange step is used to remove the kinds of small organic compounds that are in domestic water. Thus, one skilled in the art who wanted to treat raw water to produce potable water, following Jowett et al. would simply skip the ion exchange process of Jowett et al. and go directly to the activated-carbon polishing step.

The undersigned also presented arguments that one skilled in the art would not be likely to substitute a polymeric ion exchange agent known for

removal of inorganic compounds from water, like that of Weiss et al., for a cellulosic ion exchange agent known for removing fats, proteins and other large molecules from heavily contaminated fluids like blood, milk, whey, and the like. As is known in the art, and more fully argued below and shown in Exhibits A and B hereto, different ion exchange agents are used for removal of organic molecules than for inorganic molecules.

The undersigned also advised that a Requested for Continued Examination is being filed with this response.

No agreement was reached as to patentability.

**The Rejection under Section 103 over Jowett et al. in view of Weiss et al.**

Claims 1-6, 8, 10-17, 19, 20, 22-33, 35-39 and 40 have been rejected under Section 103a) as obvious over Jowett et al. (Patent No. 4,154,675) in view of Weiss et al. (Patent No. 3,560,378). The Office Action states:

As pointed out in the previous Office Action, Jowett et al. discloses removing organic carbon from water by dispersing an ion-exchange resin into the water, separating the resin from the resultant mixture, and regenerating the resin with brine for reuse (see col. 11, lines 57-60; and col. 12, lines 13-15). This reference further discloses that the water can be subjected to additional treatments of the type recited (see col. 7, lines 42-44; and col. 8, lines 28-30).

Accordingly, Jowett et al. discloses the claimed invention with the exception of the use of magnetic ion-exchange resin particles.

Weiss et al. discloses magnetic ion-exchange resin particles of the type recited; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the magnetic ion-exchange resin particles of the secondary reference for the ion-exchange resin particles of the primary reference, in order to enable separation of the resin from the treated water by magnetic means.

This rejection is respectfully traversed. Jowett et al. discloses using a cellulosic ion-exchange material. that is at most about 10% cross-linked (Abstract; col. 4, lines 6-7) to adsorb protein, fat and carbohydrate materials (col. 3, lines 45-56) from streams such as egg white, milk, or liquid extract or waste

effluent such as soya whey, milk whey or extracts from various seeds and nuts, or blood (col. 3, lines 57-65). The cellulose has a large dry particle size (40-100 mesh (col. 6, lines 1-2) and during use it swells even more to form a mechanically weak porous structure (col. 2, lines 39-45). The patent mentions that the process can be used for "purification of water for domestic use" (col. 4, lines 2-3), but does not provide any specific enablement for this use.

The Office Action responds to this final point as follows:

Applicant argues that one skilled in the art would not read Jowett et al. as a process for treating water for domestic use unless the impurities intended to be removed were fats, carbohydrates and/or proteins. This argument is not deemed to be persuasive of patentability for the claims in this application because: (1) these fats, carbohydrates and/or proteins are deemed to be types of "organic carbon" and are therefore not excluded by the scope of the claims; and (2) Jowett et al. clearly discloses that many other types of dissolved organic materials (see col. 3, lines 46-56) may be removed by the disclosed process.

However, amended claims 1 and 44 and claims dependent thereon do exclude the fats, carbohydrates and proteins as specified in the Jowett et al. reference at col. 3, lines 46-56. The claims now recite "the treatment of raw water to produce potable water." The definition of "raw water" in the art is as follows:

Raw water is water taken from the environment, and is subsequently treated or purified to produce potable water in a water purification works. Raw water should not be considered safe for drinking or washing without further treatment. (Wikipedia online Encyclopedia at [http://en.wikipedia.org/wiki/Raw\\_water](http://en.wikipedia.org/wiki/Raw_water).)

Raw water contains very minor amounts of the fats, carbohydrates and proteins and large ions specified in Jowett et al. at col. 3, lines 46-56. For convenience, the Jowett et al. text at this site is quoted below:

Examples of dissolved material which may be extracted by the process of the invention include organic polyelectrolytes such as, for instance, proteins, for example, enzymes and components of blood and tissue which may in addition comprise breakdown products such as peptides and amino acids; carbohydrates, for example, charged polysaccharides such as muco-polysaccharides;

nucleic acids, for example, ribonucleic acids and deoxyribonucleic acids; long-chain fatty acids, dyestuffs, for example, Congo Red, and quaternary ammonium compounds.

The Jowett et al. reference goes on to exemplify the types of fluids treated by its process in the next paragraph (col. 3, lines 57-65:

In the case of protein extraction, the liquid medium may be of animal, fish or vegetable origin, for example, egg white or milk; or a liquid extract or waste effluent such as soya whey, milk whey or extracts from rape seed, groundnuts, palm nuts, sunflower seeds, or olives; or blood (for example, abattoir effluent). Thus, for instance, an extracted protein may be an albumen, for example, egg albumen, lactalbumen or serum albumen, or a globulin, for example, lactoglobulin, or casein.

As shown in Exhibit A to Applicants' previous response, raw water contains a very small amount of the large organic molecules specified above. Most of the dissolved organic compounds in raw water are humic substances, which Jowett et al. teaches should be removed in a polisher or deodorizer after the larger fats, proteins and polysaccharides have been removed.

Thus, claims 1 and 44 and claims dependent thereon do not read on removing the types of impurities in the types of heavily-contaminated fluids disclosed by Jowett et al. These fluids of Jowett et al. are not raw water.

Despite the fact that the Jowett et al. reference contains a statement in the paragraph bridging columns 3 and 4 to the effect that the process may be used for purification of water for domestic use, one skilled in the art would not understand the patent to be teaching such a method.

Furthermore, even though Jowett et al. states that the process can be used for "purification of water for domestic use," if the fluid to be treated were raw water and thus contained only simple, humic dissolved organic compounds, with very small quantities of fats, carbohydrates and proteins, one skilled in the art would understand from Jowett et al. that only activated carbon or a catalytic

system for removing dissolved organic compounds would be required, and that ion-exchange materials would not be required. One skilled in the art would not be motivated to use the more complex process of Jowett et al. when a simpler process would work. In view of these teachings, contained entirely within the four corners of the Jowett et al. patent, one skilled in the art would recognize the words, "purification of water for domestic use," in the Jowett et al. patent as most likely having been inserted by a patent attorney to add breadth, and would not seriously consider actually using the Jowett et al. process to purify domestic water.

Thus, Jowett et al. does not teach a method one skilled in the art would seriously consider for treatment of raw water to produce potable water as claimed herein.

The Weiss et al. patent discloses magnetic ion-exchange resins that are more highly cross-linked than those described in Jowett et al., e.g., polyethylenimine and polyacrylic acid resins (see, e.g., Example 3), and a great deal smaller than the resins of Jowett et al. The beads of the resin disclosed in Weiss et al. are produced in such a way as to wholly encapsulate the ferromagnetic particles that make them magnetic (col. 2, lines 14-22; col. 8, lines 1-2). The patent discloses that these resins are capable of adsorbing inorganic compounds. The Weiss et al. patent does not teach or suggest that its resin is capable of adsorbing dissolved organic compounds.

The Office Action argues as follows that one skilled in the art would understand that the ion exchange agent of Weiss et al. could be used to adsorb dissolved organic compounds:

It is pointed out that the teaching of removing dissolved organic compounds with an ion exchange material is clearly provided by Jowett et al. Since the ion exchange resins of Weiss et al. also contain ion exchange groups, one of ordinary skill in the fluid purification art would readily recognize that these secondary

reference ion exchange resins would be capable of removing the polyelectrolytes and other large ions of the primary reference (see col. 4, lines 10-15 of Jowett et al.) from water in substantially the same manner as the ion exchange material of this primary reference, to produce substantially the same results.)

Applicants submit, to the contrary, that it is simply not the case that one skilled in the art would think it reasonable to substitute any ion exchange resin for any other. In particular, one skilled in the art would not expect an ion exchange resin designed for removal of metals to work for removal of organic compounds. See Exhibit A to this Amendment, an article from the online encyclopedia Wikipedia downloaded on May 9, 2006 from

[http://en.wikipedia.org/wiki/Ion\\_exchange\\_resin](http://en.wikipedia.org/wiki/Ion_exchange_resin). This article states, under the heading "Water purification," and after a discussion of using ion exchange resins to remove metals from water: "Ion exchange resins do not remove chlorine or organic contaminants from water – this is usually done by using an activated charcoal filter mixed in with the resin." That it cannot be taken for granted that ion exchange resins for removal of metals and ion exchange resins for removal of organic compounds are interchangeable is further shown in Exhibit B, an article on the use of ion exchange resins for treatment of groundwater and waste water downloaded on May 9, 2006 from the Dow Chemical website at [http://www.dow.com/liquidseps/prod/sp\\_grdwatert.htm](http://www.dow.com/liquidseps/prod/sp_grdwatert.htm). This article discusses removal of metals from water with ion exchange resins, as well as removal of organics from water, and states under the heading, "Organics Removal from Water:"

Organic materials are traditionally removed from water with activated carbon. Activated carbon is difficult to regenerate, however, and is usually used only once before it is discarded or thermally regenerated off-site. Dow has developed synthetic, polymeric adsorbents that are engineered for regeneration under milder conditions so on-site regeneration is possible. Now the organic solvent or product can be returned to the process, eliminating a waste product.

Following this statement, Exhibit B provides a list of ion exchange resins, some of which are useful for removal of organic ions, and different ones of which are useful for removal of inorganic ions.

Thus, contrary to the arguments in the Office Action, one skilled in the art would not take it for granted that an ion exchange resin useful for removing metal ions would be equally effective in removing organic ions.

Further, if the Weiss et al. resin were used in the Jowett et al. process, there would be no need for the Jowett et al. process. The Jowett et al. reference at col. 1, lines 17-26, states that cellulosic ion exchange resin is known to be effective for removal of fats and proteins from liquid waste effluent. It goes on to teach that there are problems in using this resin in the prior art packed bed process, and therefore this patent discloses a method of using the cellulosic ion exchange material by dispersing it in the fluid. The whole thrust of the Jowett et al. patent is to provide a method – dispersion of the ion exchange material in the fluid being treated – that allows the use of a cellulosic ion exchange material so that use of a packed bed can be avoided. There would be no reason to substitute a different resin that is not known to the art as particularly useful, or useful at all, for removal of fats and proteins from waste effluents into the Jowett et al process. Moreover, since the Weiss et al. resin can be used in a packed bed, neither reference provides motivation to disperse the ion exchange material in the fluid instead of using it in a packed bed method. Therefore, it would not be obvious to substitute the highly crosslinked, polymeric ion exchange resin of Weiss et al. that can be used in a packed bed process, and that is described as useful for inorganic ion removal rather than organic ion removal, for the cellulosic ion exchange resin of Jowett et al.

The Office Action asserts that it would be obvious to substitute the magnetic ion-exchange resin of Weiss et al. for the cellulosic material of Jowett et al. "in order to enable separation of the resin from the treated water by

magnetic means." However, with no other motivation to substitute the Weiss et al. resin into the Jowett et al. process, this alleged separation by magnetic means would not be likely to be a motivating factor for combining the teachings of the references. As discussed above, if a polymeric bead ion exchange resin were going to be used to treat the types of fluids to remove the types of contaminants of Jowett et al., one skilled in the art would be more likely to use a packed bed process.

Jowett et al. actually teaches against combining the references as suggested in the Office Action. Jowett et al.'s purpose is to separate fats, proteins and carbohydrates from liquids and Jowett et al.'s process uses an ion-exchange agent known to be useful for this purpose, namely a cellulosic ion-exchange material (col. 1, lines 15-26). Jowett et al. teaches that its material should not be more than 10% crosslinked. Thus, Jowett et al. teaches against the use of the more highly crosslinked magnetic ion-exchange resin of Weiss et al. It is well-settled that a reference (in this case Jowett, et al.) that teaches against a particular element (in this case a highly crosslinked resin as described in Weiss) cannot be combined with that element in order to formulate an obviousness rejection. (See, e.g., *Mitsubishi Elec. Corp. v. Ampex Corp.* 190 F.3d 1300, 51 U.S.P.Q.2d 1910 (CAFC 1999).)

The Office Action argues that the teachings in Jowett et al. that the resin should not be more than 10% crosslinked can be disregarded:

Initially, it is noted that although Applicant argues that the Weiss et al. patent discloses ion exchange resins which are more highly cross-linked than those described in Jowett et al., Applicant has not pointed to any specific portion of this patent which discloses the exact degree of crosslinking for these secondary reference resins. In any event, Jowett et al. cautions against crosslinking cellulose to an extent greater than 10% because such additional crosslinking would reduce the extent to which the ion exchange groups of the cellulose would be accessible (see col. 4, lines 6-15). Since the material of the secondary reference is not cellulose, its available ion

exchange groups would not appear to be adversely affected by any possible greater degree of crosslinking.

However, Exhibit C, a page from U.S. Patent 6,534,554, at col. 2, lines 11-24, shows that cationic and anionic ion exchange resins are typically highly crosslinked to prevent swelling and solubility, which are undesirable qualities for these resins used in water purification processes. Although the exact degree of crosslinking is not disclosed in Weiss et al., it would be expected by one skilled in the art that the Weiss et al. polymeric resin used for water purification would be "highly" crosslinked like typical ion exchange resins that are crosslinked polymers. The Jowett et al. reference specifically distinguishes its ion exchange resin that is no more than 10% crosslinked from resins having "high crosslinking" at col. 4, lines 10-15. Thus it is clear that the resin of Weiss et al. is more highly crosslinked than the ion exchange material of Jowett et al.

It is not understood why the Office Action states that crosslinking of the Jowett et al. cellulose would adversely affect the availability of ion exchange groups but crosslinking of the Weiss et al. resin would not.

In any event, it is clear that Jowett et al. teaches against an ion exchange material more highly crosslinked than 10%, and the Weiss et al. resin is such a highly crosslinked material. Thus, Applicants continue to urge that the references are not properly combined.

The Jowett et al. disclosure describes a *process* developed specifically for use with swellable non- or low-crosslinked cellulosic ion-exchange material. This swellable material is said to avoid the reduction in ion-exchange capacity which results from crosslinking, thereby maximizing capacity for polyelectrolytes and other large ions (column 4, lines 10-15). The swellable nature of the Jowett, et al. materials due to the lack of, or low, crosslinking would make them unsuited to packing in ion-exchange columns. (See Jowett et al., col. 1, line 64 – col. 2, line 13 for the disadvantages of using packed beds with cellulosic ion exchange

agents.) Accordingly, it was necessary for Jowett et al. to develop an alternate means for contacting the liquid medium with the swellable material they had developed. It would not have been obvious to substitute a small, more highly crosslinked magnetic ion-exchange resin that can be used in a packed bed for the large swellable non- or low-crosslinked material for which the Jowett process of using a dispersed resin was specifically developed. The Jowett et al. reference therefore provides no motivation for using a more highly crosslinked resin in its process, as one skilled in the art, from a reading of the reference, would see that a more highly crosslinked resin should not be used, and if such a highly-crosslinked resin, that could be used in a packed bed process, were used, one skill in the art would see no need for the Jowett et al. process of dispersing the ion exchange material in the fluid to be treated.

Furthermore, no *prima facie* obviousness rejection has been made out because Weiss et al. does not teach or suggest that the magnetic resin used in its process is useful for adsorbing proteins, carbohydrates and fats, or indeed any organic compound. Jowett et al. uses the cellulosic ion exchange material because it is effective for removing proteins and fat (col. 1, lines 19-26). It would therefore not be obvious to one skilled in the art to utilize the magnetic resin of Weiss et al. to remove fats, carbohydrates and proteins from fluids, which is the purpose of the Jowett et al. reference. There is therefore no motivation within the references to combine them. Although the Office Action offers ease of separation of the magnetic resin from the treated water as a possible motivation for combining the references, this is not relevant when the purpose of making the combination (separation of fats, carbohydrates and proteins) is not known by those of skill in the art to be possible using the substitution.

Moreover, the particles of cellulosic ion exchange resin of Jowett et al. are disclosed at col. 5, line 2 as having a dry particle size of 40-100 mesh (B.S.S.), i.e., about 387 microns to about 49 microns (see Exhibit D, a conversion table downloaded from The Jet Pulverizer Company website at

<http://www.jetpul.com/mequip/refinfo.htm> on May 8, 2006). Since the Jowett et al. particles are disclosed as being swellable (col. 2, lines 41-45), in use they would have a much larger particle size. In contrast, the magnetic particles of Weiss et al. are disclosed as being 5-50 micron-diameter spheres (col. 8, line 55 and col. 3, lines 57-58). As discussed above, Jowett et al. uses the cellulosic ion exchange resin because it is known to be effective for removing proteins and fats from waste effluents. One skilled in the art would not be likely to substitute an ion exchange resin that is known to be useful only for removing inorganic compounds from water for an ion exchange agent that is known to be useful for removing proteins and fats from food processing fluids and the like, when the process is one for removing proteins and fats from food processing fluids. It is unlikely that one skilled in the art would expect to be able to substitute in another ion exchange resin that differs in important properties such as degree of crosslinking, size, and swellability, with any hope of success.

Thus there is no motivation to combine the Jowett et al. process with the Weiss, et al. ion exchange resin. No *prima facie* case of obviousness has been made out, and it is therefore submitted that the claims are not obvious in view of the references. Withdrawal of the rejection is respectfully requested.

**The Rejection under Section 103 over Jowett et al. in view of Weiss et al. in further view of Carlson, et al.**

Claims 7 and 18 have been rejected as obvious over Jowett et al. and Weiss et al. as applied above, and further in view of Carlson et al. (U.S. Patent No. 4,670,154). The Office Action states:

As pointed out in the previous Office Action, the modified primary reference discloses the claimed invention with the exception of the recited vacuum collection step. Carlson et al. teaches (col. 3, lines 19-22) that it is known to transfer ion-exchange resins utilizing a vacuum generating device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to transfer the resin of the modified primary reference in the manner taught by Carlson et al., in order to obtain the advantages disclosed

by this secondary reference for the system of the modified primary reference.

It is submitted that the Carlson et al. reference does not supply the deficiencies of the primary references, namely, it does not provide motivation for combining the primary references, nor does it teach removing dissolved organic carbon using a magnetic ion-exchange resin. Thus, it does not render the independent claims obvious, and for that reason, dependent claims 7 and 18 are also not obvious over the cited references. Further, one skilled in the art would not find it obvious to utilize the venturi-type vacuum device disclosed in Carlson et al. for drawing a non-magnetic ion-exchange resin into a flow line in order to collect a magnetic resin which has agglomerated, as the physical properties of a magnetically agglomerated magnetic resin are likely to be different from those of a non-magnetic resin.

The Office Action counters this argument by stating that: "although the properties of the two types of resin may be different, a vacuum device would still be capable of transferring these resins from one location to the other." It is pointed out, however, that the Carlson reference uses the vacuum to draw resin into the flow line, not to collect magnetically agglomerated resin, or indeed to collect any resin, and therefore this reference contains no teaching or suggestion of the use of the claimed vacuum collection of agglomerated magnetic resin. Withdrawal of the rejection is therefore respectfully requested.

**The Rejection under Section 103 over Jowett et al. in view of Weiss et al. in further view of Corne et al.**

Claims 9 and 21 have been rejected as obvious over Jowett et al. and Weiss et al. as applied above, and further in view of Corne et al. (U.S. Patent No. 1,190,863). The Office Action states:

As pointed out in the previous Office Action, the modified primary reference discloses the claimed invention with the exception of the recited tilted plates. Corne et al. discloses (see Fig. 9) a settling

tank having a series of tilted plates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the settling tank of the secondary reference for the settler of the modified primary reference (see col. 8, line 30 of Jowett et al.), since this secondary reference settling tank is capable of separating solids from a liquid in substantially the same manner as the settler of the modified primary reference, to produce substantially the same results.

It is submitted that the Corne et al. reference does not supply the deficiencies of the primary references, namely, it does not provide motivation for combining the primary references, nor does it teach removing dissolved organic carbon from a fluid using a magnetic ion-exchange resin. Thus, it does not render the independent claims obvious, and for that reason, dependent claims 9 and 21 are also not obvious over the cited references. Moreover, the Corne et al. settling tanks are used for settling mud, scale, and fine particles of bagasse from cane juice in the manufacture of sugar, not for separating magnetic resin particles. It would not be obvious to one skilled in the art that such settling plates would operate well to recover magnetic ion-exchange resin beads as in the present process, in view of the different physical properties of the muds and particles found in sugar cane juice from those of magnetic ion-exchange resins.

The Office Action argues that "although the properties of the two types of material may be different, a tilted plate settling tank would still be capable of separating magnetic resins from a liquid undergoing treatment." However, the Corne et al. patent teaches using tilted plates to remove impurities from a food processing fluid. It does not teach or suggest the use of tilted plates for separating an ion exchange resin from either a food processing fluid like that of Jowett et al. or from water like Weiss et al. One skilled in the art would not be motivated to substitute a means for settling mud, scale and fine particles of bagasse from cane juice as taught in Corne et al. to separate a magnetic ion exchange resin from treated water. Withdrawal of the rejection is therefore respectfully requested.

**The Rejection under Section 103 over Jowett et al. in view of Weiss et al. in further view of Bacchus et al.**

Claim 34 has been rejected as obvious over Jowett et al. and Weiss et al. as applied above, and further in view of Bacchus et al. (U.S. Patent No. 6,110,375). The Office Action states:

As pointed out in the previous Office Action, the modified primary reference discloses the claimed invention with the exception of the recited membrane treatment. Bacchus et al. teaches purifying water with an ion-exchange resin, and subsequently subjecting the water to a treatment by a membrane filter (see col. 2, lines 50-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to subject the ion-exchange resin treated water of the modified primary reference to a membrane filtration treatment, as suggested by Bacchus et al., in order to further purify this water.

It is submitted that the Bacchus et al. reference does not supply the deficiencies of the primary references, namely, it does not provide motivation for combining the primary references, nor does it teach removing dissolved organic carbon using a magnetic ion-exchange resin. Thus, it does not render the independent claims obvious, and for that reason, dependent claim 34 is also not obvious over the cited references. Moreover, it is unlikely one of skill in the art would think it useful to combine Bacchus et al. with Jowett et al. in view of the fact that Jowett et al. discloses that post-treatments after treatment with the cellulosic ion-exchange agent include chlorination, dissolved gas removal, removal of organic materials by an activated carbon or a catalytic system, and oxidation or further ion-exchange treatment (col. 7, lines 41-50). No mention of the use of membrane filtration is disclosed, presumably because the post-ion-exchange fluid of Jowett et al. is not sufficiently pure to be subjected to membrane filtration without immediately fouling the membrane.

The Office Action argues against this point by stating that "the primary reference clearly discloses that its process can be used to purify water 'for

domestic use' (see col. 4, line 3), it is unlikely that such water would immediately foul a filtration membrane."

However, as pointed out above, despite the language at col. 4, line 3 of Jowett et al. that the process could be used to purify water for domestic use, one skilled in the art would not be likely to apply it to this use, but rather would recognize the language in the patent as most likely being broadening language added by a patent attorney. To use a process designed for removing large molecules from extremely contaminated fluids for purification of raw water would be like using a cannon to shoot a sparrow. No one skilled in the art would do it. Thus no one skilled in the art would combine the references in the way suggested by the Office Action. Withdrawal of this rejection is therefore respectfully requested.

### **Summary**

It has been shown that the Jowett et al. process would not be considered by one skilled in the art to be suitable for processing raw water to produce potable water as claimed in claims 1, 44 and claims dependent thereon, that combining the references would not result in the present invention.

Moreover, one skilled in the art would not take it for granted that an ion exchange agent used to remove inorganics from water could be substituted for an ion exchange agent used to remove fats, proteins, and other large molecules from food processing fluids. The likelihood of success in combining the references is too low to meet the standards of a *prima facie* case of obviousness.

Because Jowett et al. teaches against the use of highly crosslinked ion exchange agents, it is not properly combined with Weiss et al. that teaches such a highly crosslinked ion exchange agent.

It has also been shown that there would be no motivation for one skilled in the art to combine the references because the Jowett et al. ion exchange material and the Weiss et al. polymeric ion exchange resin beads differ in important properties including amount of crosslinking, size, and swellability.

It has further been shown that the Jowett et al. process of dispersing the ion exchange material in the fluid being treated was created only so that the large, swellable, weakly crosslinked cellulosic ion exchange materials already known to the art to be useful for treating highly contaminated fluids such as milk, blood, whey, and the like to remove large molecules such as proteins and fats, could be effectively used. The Jowett et al. process was created to solve the problem that those cellulosic materials blocked flow in packed bed processes. However, the highly crosslinked polymeric ion exchange of resin of Weiss et al. was known to be useful in packed bed processes. Thus, if the Weiss et al. resin were to be used, there would be no need to use the Jowett et al. process of dispersing the ion exchange material in the fluid.

**Conclusion**

In view of the foregoing, it is submitted that this case is in condition for allowance, and passage to issuance is respectfully requested. A Request for Continued Examination together with the required fee is submitted with this Amendment.

If there are any outstanding issues related to patentability, the courtesy of a further telephone interview is requested, and the Examiner is invited to call to arrange a mutually convenient time.

Please charge any fees due or for any extension of time required for this response to Deposit Account No. 07-1969.

Respectfully submitted,



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